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**TECHNICAL REPORT**

NO. 12653



FABRICATION OF T-156 TRACK BUSHING ASSEMBLIES

FINAL REPORT

JULY, 1982

U. S. ARMY

TANK - AUTOMOTIVE COMMAND

CONTRACT NO. DAAE07-81-C-4095

by C. E. LYNN

THE GOODYEAR TIRE & RUBBER CO.  
P. O. BOX 288  
ST MARYS, OHIO 45885

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**U.S. ARMY TANK-AUTOMOTIVE COMMAND  
RESEARCH AND DEVELOPMENT CENTER  
Warren, Michigan 48090**

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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
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9. PERFORMING ORGANIZATION NAME AND ADDRESS  The Goodyear Tire & Rubber Company P. O. Box 288 St Marys, Ohio 45885		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS  DD Form 1423
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)  This report gives a brief description of the manufacturing process for rubberizing 1500 T-156 pins according to drawing P3-18483		



SUMMARY

The Goodyear Tire & Rubber Company, a manufacturer of component products for military tracked vehicles, rubberized 1500 T-156 track shoe pins (Ref Dwg 12274418) to a given configuration as shown on Dwg P3-18483.

Material used in the rubberization process was Goodyear's QPL rubber - SM7541 as specified on Dwg P3-18483.

Materials and processing were monitored according to Military Specification Mil-T-11891 and Goodyear's QCI - No. 25.

Manufacturing technology applicable to this part is similar to that used in the fabrication of other military track-shoe-pin bushing assemblies.

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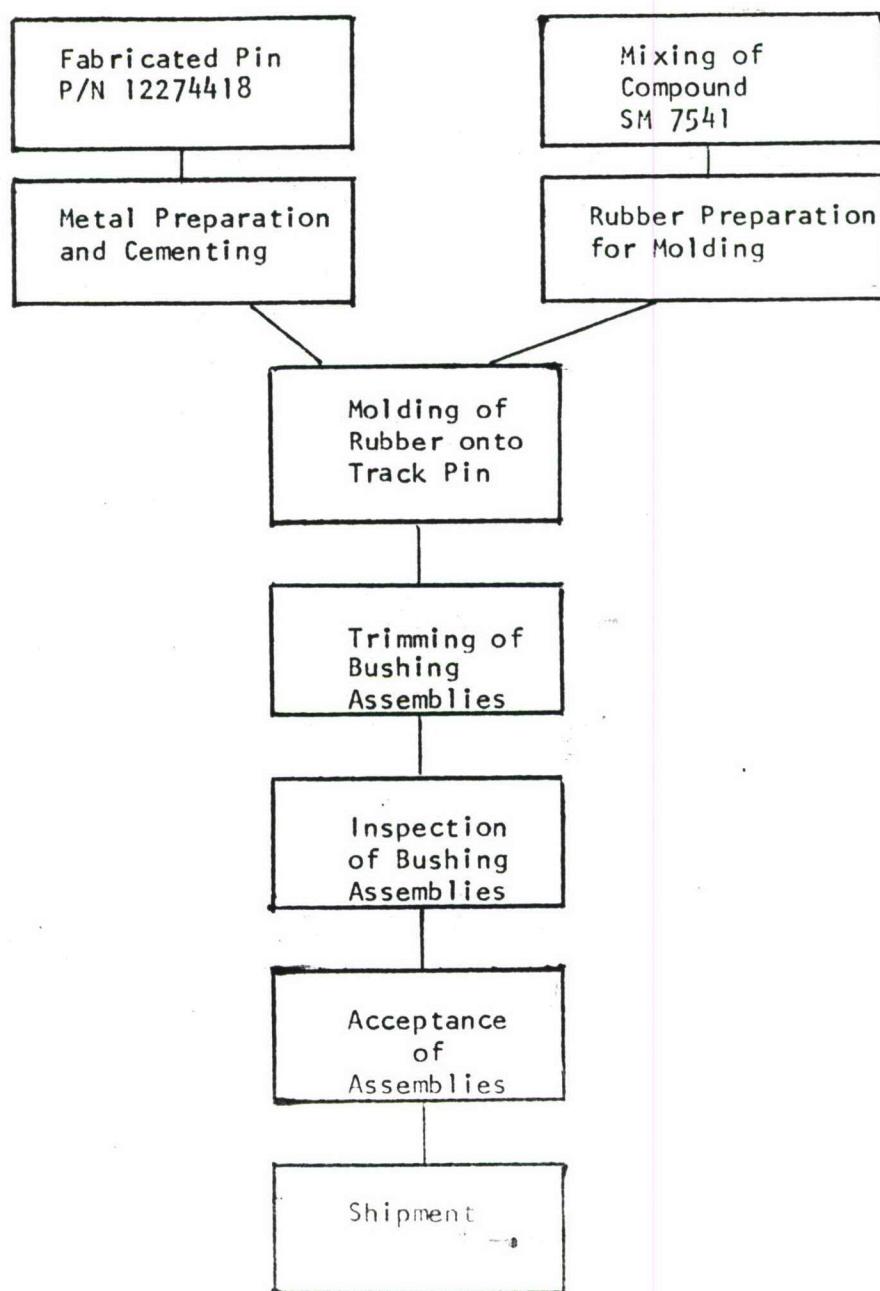
OBJECTIVE

The purpose is to identify the manufacturing processes of a T-156 track shoe bushing assembly and denote problem areas within that procedure.

An independent contractor, not an agent of the Government, shall provide the personnel, materials and manufacturing facilities to fabricate 1,500 T-156 track pins and rubberize them per drawing P3-18483.

### DESCRIPTION OF ASSEMBLY PROCEDURE

The description of assembly procedures is presented in the following flow chart.



CONCLUSION

The assembly and molding process for the 1,500 T-156 track-shoe-pin bushing assemblies was accomplished at the manufacturing facilities of The Goodyear Tire and Rubber Co., St Marys Plant, St Marys, Ohio.

No particular problems were encountered in any of the various production processes.

All phases were monitored under Mil-T-11891 and Goodyear's QCI 25.

## PHYSICAL TESTING RESULTS

### Shot Peening Intensity Values

(Checks per MIL-S-13165 to 0.010 A to 0.020# A)

Results: 0.012 - 0.013 Range

Average Value - 0.0125

### Bushing Adhesion Pull Values

(Checks per MIL-T-11891 - Outer Bushings - 33 lb/min)

- Inner Bushings - 37 lb/min)

Results: 40 - 65 Range - Inner

Average Value - 52 lb

Results: 34 - 62 Range - Outer

Average Value 50 lb

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DRAWINGS

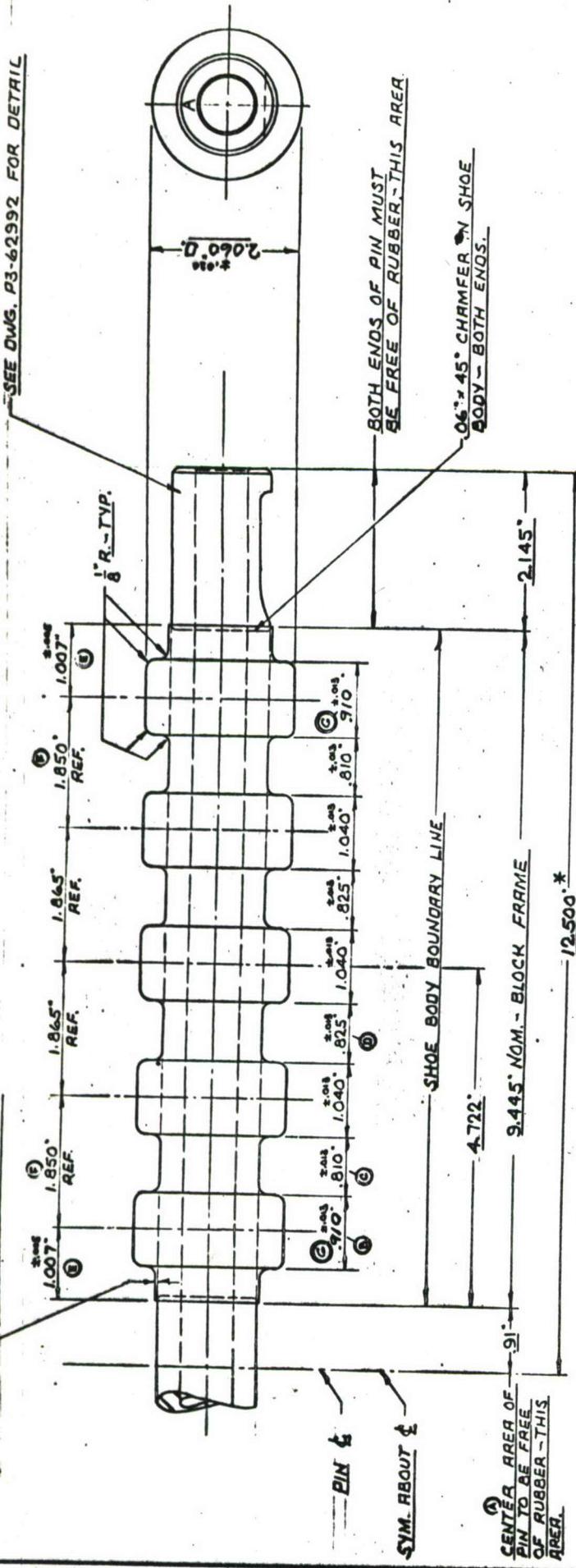
Attachment I - Dwg No. P3-18483, Rev 3, Dated 1-20-81

Attachment II - Dwg No. 12274418, Rev C, Dated 5-12-80

**ATTACHMENT I**

30° MIN. RUBBER  
COVERAGE - BOTH ENDS.

SEE DWG. P3-62992 FOR DETAIL



① CENTER AREA OF -  
PIN TO BE FREE  
OF RUBBER - THIS  
AREA.

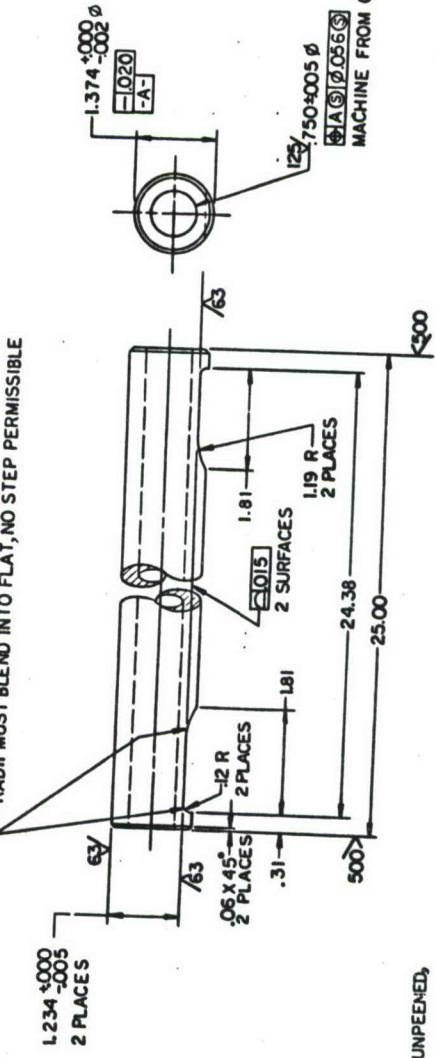
NOTE: MATERIAL: RUBBER QPL-SM 7541  
GOODYEAR TIRE & RUBBER CO.  
ST. MARYS, OHIO

2. TOLERANCE  
RMA STANDARD DESIGNATION 'A2'

3. WORK PERFORMED UNDER CONTRACT  
N<sup>o</sup>. DARK 30-79-C-0143

REVISIONS		DESCRIPTION	DATE	APPROVED
<b>B</b>	<b>REDRAWN WITHOUT CHANGES</b>			
<b>D</b>	<b>WAS SIZE PER ECP XM-4005</b>			
<b>DWG.</b>	<b>APPL. SNR ADDED</b>		<b>2-22</b>	<b>1/17</b>
<b>C</b>	<b>NOTE B REMOVED (2) NOTE C REVISED</b>			
<b>B</b>	<b>ECP A6511</b>			

**RADI** MUST BLEND INTO FLAT, NO STEP PERMISSIBLE



**9. QUALITY ASSURANCE REQUIREMENTS**  
**(QAR)** APPLY TO THIS DRAWING.  
**(QAR NO. SAME AS PART NO.)**

**7 REMOVE ALL BURRS AND SHARP EDGES**  
**6 IF STRAIGHTENING IS REQUIRED IT**  
**MAY BE PERFORMED AT**  
**ROOM TEMPERATURE**

1. SHOT PEEN ENTIRE PIN, EXCEPT ENDS MAY BE UNPEENED,  
PER SPEC MIL-S-13165 TO .010A TO .020A,  
95% MINIMUM COVERAGE MEASURED  
BY POLAROID

SURFACE ROUGHNESS VALUES ARE PRIOR TO SHOT PEENING

**NO TOTAL AND NOT MORE THAN .005 PARTIAL DECARBURIZATION PERMITTED BEFORE SHOT PEENING HEAT TREATMENT.**

QUENCH AND TEMPER  
AS QUENCHED HARDNESS 52 RC MIN  
AS TEMPERED HARDNESS 40/45 RC

MATERIAL: STEEL ALLOY BAR 8650H,  
SPEC ASTM A322 OR A331.

108

TENTH DRAFT IN ACCORDANCE WITH STANDARDS APPROVED

PART NO. <b>12274418</b>		U.S. ARMY TANK AUTOMOTIVE COMMAND WARREN, MICHIGAN 48090	
<p>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES</p> <p>CONTRACT NUMBER: DA-AM-30-77-C-0006 CONTRACTOR: CHRYSLER CORP. DEFENSE DIV</p> <p>MATERIAL: 1</p> <p>NOTICE 1</p> <p>WALL:</p> <p>SEE ENGINEERING DRAWINGS FOR DETAILS.</p> <p>NET WEIGHT: 450 LB.</p> <p>SHIP TO: 100% APPROVED: 100%</p>			
<p>1 PLATE</p> <p>.03</p> <p>3 PLACE</p> <p>1 —</p>		<p>BRASS BY</p> <p>2-6-73</p> <p>CHEMIST: ENGINEER</p> <p>SAFETY CHECKED NO.</p> <p>D 19207</p> <p>SCALE: 1/1</p> <p>UNIT WT: 70 LBS.</p> <p>SHEET _____</p>	
<p>PIN</p>			

A 6511